CORNELL EXTENSION BULLETIN 844

Sanitary Food Handling

in CHURCH COMMUNITY CENTER and CAMP

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CHURCH festivals, Grange suppers, and the like are so enjoyable that no one should – nor could, probably – discourage their continuance. Yet public health authorities tell us that outbreaks of bacterial food poisoning can often be traced to community meals. Therefore, it is vital for every worker on the foods committees, every cook, waitress, and dishwasher to know and use sanitary food practices.

You may well believe the authorities when you consider that community meals are usually prepared under conditions less sanitary than those at home or in a well-operated restaurant. Toilet and handwashing facilities are inadequate in most churches and community halls and in some camps. There is seldom enough hot water to make good dishwashing possible.

Few churches or community halls have any refrigeration. Camp kitchens seldom have as much refrigeration as they need. Food is prepared by people unaware of the hazards involved and usually without the supervision of a trained food service manager. Too often, food is prepared too far in advance of the meal. Certain foods are kept warm enough to serve but not hot enough to prevent the growth of bacteria. Other foods which should be refrigerated are left standing at room temperature. Raw milk, cream, and other milk products are sometimes used despite the fact that they can cause undulant fever. Even the drinking water may come from an untested source.

The National Sanitation Foundation says sanitation is a way of life which must come from within people. This statement suggests that people need to understand the reasons why they should practice habits of personal cleanliness and take sanitary precautions when they handle food. This bulletin gives some underlying reasons for the methods of sanitary food handling which it recommends to people preparing community meals.

NEW YORK STATE COLLEGE OF HOME ECONOMICS

The Relation of Food Handling to Disease

We can control bacteria

The whole field of sanitation is based on a knowledge of bacteria, or germs, as bacteria are commonly called. Germs are everywhere, in water, soil, air, on everything we touch. We can't get away from them, but we can control them and eliminate them where necessary.

Fortunately for us, some bacteria are friendly. They produce the characteristics of a great many foods we eat and enjoy, such as cheese, buttermilk, vinegar, and sauerkraut.

Bacteria counts help us

We can measure the sanitary quality of many things by taking a sample of them, placing the sample under a microscope, and counting the bacteria. We use bacteria counts to tell us whether water and milk are safe to drink, and clams and oysters fit to eat. We also use bacteria counts to measure the effectiveness of dishwashing practices. By taking swabs of glasses and cups, the health officer can find out how well your dishes have been washed and sanitized.

Disease can be spread by food

Germs which cause disease are called pathogenic bacteria. The United States Health Service lists 62 diseases that can be passed from one person to another. Twenty-four of these can be spread through foods; for example, tuberculosis, diphtheria, food poisoning, typhoid fever, amoebic dysentery, and diarrhea. Trench mouth, colds, influenza, and many other infections can be spread by improperly washed and sanitized glasses and cups. So you can see how important good dishwashing is.

Germs multiply fast

Germs must have food, moisture, and warmth in order to live. They multiply by fission, which merely means by breaking in two. One bacterium splits in the center and forms two bacteria. This splitting happens every 20 to 30 minutes. So if you had one bacterium and let it grow for 4 hours, at the end of that time you would have 4,096 bacteria.

Germs get around

Bacteria could travel only a short distance if they didn't depend on us and on animals and insects for their transportation. Generally, we are very accommodating and help them travel from place to place, even though we don't realize that we're doing so. When we sneeze or cough we blow thousands of tiny drops of moisture into the air, and each droplet is loaded with bacteria, especially if we have colds. In the laboratory, it has been found that these moisture droplets which carry bacteria can travel nine feet and may remain suspended in air for a long time. These are the reasons why it is important for us to cover the mouth and nose when we sneeze.

Through food, disease may be spread from the food handler to the guests. Germs from dirty hands or from infected cuts or boils are easily

passed into food. At room temperature they grow rapidly and produce a toxin, or poison, which causes severe stomach or intestinal illness. Unfortunately, the toxin doesn't change the smell or taste of the food. Ground meat, salad dressing, creamed mixtures, custards, and cream-filled pies and other pastries are especially good breeding places for germs. Such foods should be refrigerated as soon as they are prepared or not offered to the public, particularly during hot weather. Obviously, food handlers need to wash their hands often. A person who has an infected cut, boil, or open sore should not handle food until the sore is healed.

Some people who appear healthy and feel well may have disease germs in their systems. These people are called carriers because they can carry the disease to other people by sneezing and coughing or through their intestinal discharges. You can see why it is so important for people handling food to wash their hands frequently, especially after every visit to the toilet.

Pork should be well cooked

Certain diseases can be transmitted through improperly cooked food. Some hogs have a disease called trichinosis and the meat from these hogs contains tiny worms known as trichinae. These worms, unless killed by proper cooking, cause the same disease, trichinosis, in human beings. Therefore, all pork should be cooked thoroughly until none of the meat is pink colored. The safest plan is to use a meat thermometer and roast the meat until the thermometer registers 185° F. Not all pork is diseased, but we should take no chances.

Botulism, which is nearly always fatal, is probably most dreaded of the food poisonings. Fortunately it is rare. You can avoid it if you will boil vigorously for 15 minutes any home-canned nonacid foods such as peas and string beans.

Insects and rodents spread disease

Diseases are also spread by flies, roaches, rats, and mice. These creatures are not particular whether they feed on garbage or the choicest foods. When they stand or walk on food, they transfer bacteria from their bodies to the food. Anyone eating food that roaches or rodents have touched may contract the disease these pests carried on or in their bodies. Even droppings from rats and mice may spread disease. It is important, therefore, to eliminate or at least control flies, roaches, rats, and mice in food handling establishments.

Temperature controls bacteria

Cold will not kill bacteria but will restrict their growth. Refrigeration is important in food handling because it prevents the growth of bacteria that get into food. If any disease germs should be in the food, refrigeration will keep them from multiplying and increasing to a number which might cause disease.

Heat is one of the most effective ways to kill germs. When food is thoroughly cooked, it becomes bacteria-free and safe to eat. Cooked food

can become contaminated and dangerous, however, through careless handling.

A temperature of 170° F. or over will kill bacteria quickly. Clean dishes subjected to this temperature become sanitized and safe to use.

Chemicals can kill bacteria

Chemicals provide another important way to destroy bacteria. Chlorine and the quaternary ammonium compounds cause the outer wall of the bacteria cells to rupture, and thereby kill the bacteria. Quaternary ammonium compounds are a new family of chemicals similar to chlorine. They kill germs quickly, even though the rinse water is not very hot, provided the solution is strong enough. For that reason we recommend chemicals in the final rinsing of dishes in situations where there isn't enough hot water at 170° to 180° F.

Do's and Don't's for Food Handlers

1. Use water from a safe municipal supply or from another source known to be of good sanitary quality.

2. Wash your hands often with soap and warm water, especially after you use the toilet. Keep your hands away from your mouth and nose. Wear clean, washable clothes, and a cap or hair net.

3. Regard your hands as contaminated. Keep them out of food as much as you can, and away from dish surfaces that come in contact with the diners' lips. Learn to pick up glasses at the base, and cups and silver by the handles.

4. Do not handle food while you have an open sore or boil on your hands, forearms, or face.

5. Do not handle food if you have a sore throat or sinusitis, or have recently recovered from typhoid or diarrhea.

6. Don't use cooking spoons or forks to taste food while cooking or serving. Don't lick your fingers while you are working with food.

7. Use only pasteurized milk, cream, ice cream, butter, and cheese.

8. Buy meats which bear the federal inspection stamp, or are from a locally inspected source. Cook pork till a meat thermometer registers an internal temperature of 185° F.

9. Serve oysters and clams only from approved sources. You can determine whether the source is approved by checking the labels against a list of approved shippers and dealers obtainable from state or city health officers.

10. Boil vigorously for 15 minutes such home-canned nonacid foods as peas and string beans.

11. Do not use dried eggs except for baking. They may contain salmonella bacteria, which can cause illness unless the product in which they are used is thoroughly cooked.

12. Do not serve cream puddings, cream pies, or cream puffs unless you can refrigerate them as soon as they are prepared. Keep them in the re-

frigerator until they are served.

13. Keep your kitchen free of flies, roaches, rats, and mice.

14. Label poisons; store them apart from your food. Too often, white, powdered insecticides have been mistaken for sugar or flour.

15. Keep fresh foods and cooked foods that must be held for several hours in the refrigerator at a temperature between 35° and 42° F. Meats, particularly tenderized ham, will spoil if they are held at room temperature for long periods after cooking. Ham and held-over chicken and turkey are frequently the cause of bacterial food poisoning.

16. Practice good housekeeping. Wash tabletops and other work surfaces everytime you use them. Defrost and clean refrigerators at a regular time each week. Keep your storeroom clean and in order. Wash meat grinders and meat slicers thoroughly immediately after you use them. If these pieces of equipment are not washed as soon as they are used, germs multiply in the meat particles that remain in them, and may cause illness.

Dishwashing and Sanitation

There are good and poor ways to wash dishes. The object is to get clean dishes and utensils that have a low bacterial count. Machines can give you clean, sanitary dishes, but use of a dishwashing machine doesn't guarantee that the dishes will be clean. You can get good results either by machine or hand dishwashing if you have these essentials:

1. *Enough work space* and a convenient arrangement of dish tables and equipment. You'll need more table space for soiled dishes than for clean ones.

2. *Plenty of hot water.* Water should range in temperature from 100° to 120° F. for satisfactory hand dishwashing or 140° to 160° F. for machine dishwashing where there is a good pre-flush arrangement. The final sanitizing rinse must remain between 170° and 180° F. whether

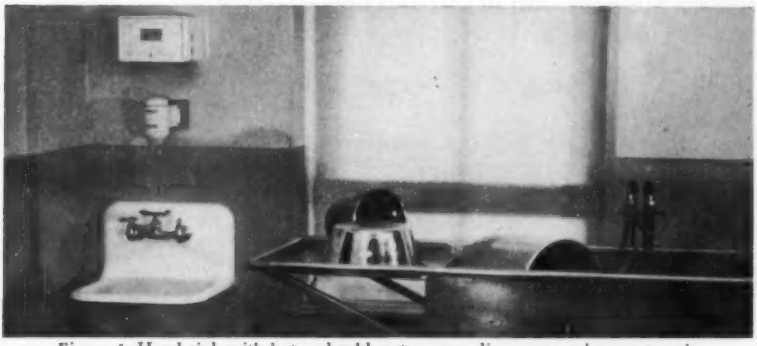

Figure 1. Hand sink with hot and cold water, soap dispenser, and paper towels.

dishes are washed by hand or by machine.

3. *The right equipment and supplies.* Use a *rubber scraper* or waste paper for scraping the dishes; use *dishpans* or a two- or three-compartment *sink* for washing and rinsing dishes. You'll need *wire racks with long handles* for immersing glasses, cups, and silver in 170° to 180° F. water or in a *sanitizing solution.* If you must dry dishes, you'll need a lot of *clean towels* or sugar sacks. Of course, it's better to let your dishes air-dry, but you can't easily do this unless your sanitizing rinse is very hot, and your clean dish space large. Soaps are all right for dishwashing done by hand but you'll need to use a *detergent* or dishwashing compound for a dishwashing machine. The detergent will soften hard water and dissolve dish soils. It may foam to some extent, but it will not form a suds. You'll need *metal sponges, steel wool,* a flexible *metal scraper,* and a short-handled, *stiff brush* for cleaning pots and pans.

Now you're all set to do a good dishwashing job by hand:

1. Scrape dishes to remove food particles; rinse or pre-flush dishes; stack, separating the glasses, silver, and china. Soak in *cold* water utensils that have held eggs, cheese, meats, or starchy foods. Soak utensils that have held fats and sugar or sirup in *hot* water.

2. Wash dishes in clean water as near to 120° F. as possible. Soap may be used, but a detergent is better. Wash glassware, then silver and china.

3. Rinse dishes in clean, warm water. This rinse is especially important if soap has been used in dishwashing, since soap residue makes the quaternary ammonium compounds less effective as disinfectants.

4. Place dishes and silver in wire racks.

5. Sanitize all dishes and silver by either one of the following methods:

a. Immerse dishes and silver in a sanitizing solution. The State Department of Health advises a qua-

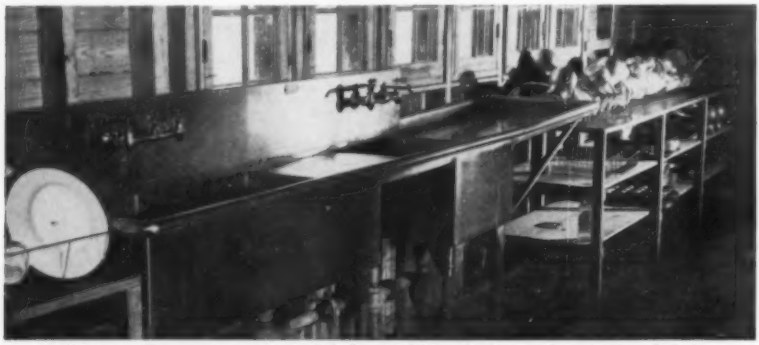

Figure 2. Three compartment sink for washing, rinsing, and sanitizing dishes.

ternary ammonium compound. These compounds are not poisonous. In dilution, these germicides are colorless and odorless and will not irritate the skin or discolor the silver. The quaternary ammonium compounds are effective in cold as well as hot water. They should be used according to the directions on the package.

b. Immerse dishes and silver in clear water maintained at a temperature of from 170° to 180° F. To maintain this high a temperature, water must be kept over direct heat.

6. Allow dishes to air-dry if space is available; otherwise, wipe them with clean towels. Store dishes in clean cupboards or cover with clean towels.

7. Wash dishcloths and towels in clean, hot water with soap. Rinse thoroughly, sanitize by the same method used for dishes, and hang the towels where they will dry quickly.

8. Clean dishpans, sinks, and work surfaces.

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